

# *Executive Summary*

Although many people envision National Wildlife Refuges as pristine havens for wildlife, many refuges also have contaminant issues. One aspect of maintaining environmental health for refuges is to assess contaminant threats to refuge lands and resources. The U.S. Fish and Wildlife Service (USFWS) utilizes the contaminant assessment process (CAP) to document existing and potential contamination issues affecting refuges by assessing several factors including known/suspected contaminant sources, contaminated areas, contaminant transport pathways and areas vulnerable to spills/contamination. By utilizing the CAP, a comprehensive inventory of known and potential contamination threats is developed. Assessment results allow USFWS personnel to understand contaminant issues affecting trust resources, prioritize necessary sampling and/or cleanup actions, develop proposals for future investigations, initiate pollution prevention activities and incorporate contaminant issues into refuge Comprehensive Conservation Plans. In 1999, the contaminant assessment process was initiated for the 16 National Wildlife Refuges in Alaska.

Although many people think of Alaska as an untouched wilderness—the last frontier, Alaska is not immune to contaminant problems. In fact, its remoteness has contributed to its contaminant burden. Even the National Wildlife Refuges in Alaska are not impervious to contaminant threats, and many of them have significant and regrettable contaminant histories. Past and current uses of refuge lands in Alaska have included a variety of activities including oil exploration and drilling, mining, military activities and even nuclear weapons testing. Many times after operations ceased, sites were abandoned with little or no thought as to what was left behind. Because costs to transport wastes and debris from remote Alaskan sites are considerable, entire facilities were commonly left intact or minimally cleaned. At some sites, hazardous materials were spilled with little or no subsequent cleanup. On many refuges in Alaska (and at other locations throughout Alaska), abandoned 55 gallon drums dot the landscape. These abandoned drums rust through with time, releasing their contents (if any) to the surrounding environment.

This contaminant assessment report documents known and suspected contaminant threats to the Kenai National Wildlife Refuge (KNWR), the first refuge in Alaska to receive a contaminant assessment. Prior to and since its establishment, the KNWR has experienced a variety of activities which have introduced contaminants into the environment. Various parties have been responsible for these contaminant events including oil and gas operators, the military, inholders, miners and the USFWS. This report documents numerous potential contamination sources and issues for the refuge including the following: oil and gas development, pesticide use, Formerly Used Defense Sites (FUDS), development near the refuge boundaries, mining, waste disposal, recreational uses, fires and fire retardants,

inholders, aircraft accidents, biotic sources and physical transport of contaminants.

During the process of compiling the contaminant assessment data, it became apparent that the primary source of spills and contamination events for the KNWR are related to oil and gas development. Currently, the KNWR is the only refuge in Alaska where commercial oil and gas production is permitted. Two oil and gas fields are in operation on the refuge, the Swanson River Field (circa 1956) and Beaver Creek Field (circa 1967). Throughout the years, hundreds of spills have occurred at these two fields, including a \$40 million polychlorinated biphenyl (PCB) cleanup at Swanson River Field from 1984 to 1992. Many of these contamination events went unnoticed for several years to decades, and it is possible that other unknown sources of contamination may exist at these fields.

Areas of concern, future sampling needs and potentially contaminated areas have been identified in this report. Because many contaminant issues went undetected for extended periods of time at Swanson River Field and Beaver Creek Field, a well-supported contaminant assessment and monitoring program is recommended for these fields. The refuge also could greatly benefit from more baseline studies, which assess contaminant levels in soil, sediment, water and biota. Little data exist for establishing contaminant baseline levels on the refuge. Baseline data would be helpful in assessing the impacts from potential contamination events on and near the refuge. These data also could be used to establish the contaminant contribution from off-refuge sources, including atmospheric and biotic transport mechanisms. Ideally, contaminant baseline studies would be conducted on all of the National Wildlife Refuges in Alaska, followed by periodic trend monitoring.

Several potentially contaminated areas exist on the KNWR. Some of these areas are documented contaminant sites where cleanup activities have occurred; however, it may be beneficial to conduct additional sampling at these areas to determine if residual contamination is an issue. Other potentially contaminated areas have yet to be examined for contaminants. The following areas/species are recommended for future inspection and/or sampling:

- 1) A contaminant assessment and monitoring program is recommended for Swanson River Field and Beaver Creek Field. Some sampling areas may include the following:
  - a) PCB excavation, incineration and disposal sites at SRF (page 12).
  - b) Locations where fires and explosions have occurred (pages 28-29).
  - c) Former locations of PCB-containing transformers at SRF (page 29).
  - d) Former locations of mercury manometers at SRF (pages 29-30).
- 2) Locations where pesticides such as 2,4,5-T were used; dioxin contamination could be an issue (page 32).

- 3) Former Army recreational camp at Skilak Lake (page 35).
- 4) Naptowne Radio Relay site (pages 35-36).
- 5) Surprise Creek mining location (pages 44-46).
- 6) Cooper Creek watershed and the Kenai River downstream from where mining occurred on Cooper Creek (page 47).
- 7) Anadromous, migratory, and resident species to determine baseline contaminant concentrations and determine if biotic transport of contaminants is a concern (page 59).